

Anesthesia Options in Total Joint Arthroplasty

What types of anesthesia options are available?

Hip and knee replacement surgery are highly successful procedures designed to reduce pain and improve function for patients. Anesthesia during surgery and pain control after surgery are essential to maximizing outcomes and the patient experience. This requires a team approach with the surgeon and the anesthesiologist working together with the patient. Not all anesthesia is the same as there are different options available for total joint replacement surgeries. The two main categories are: general anesthesia (GA) and regional anesthesia (RA).

GA uses intravenous (IV) medications and inhales agents (“gas” anesthetics). GA results in the patient being asleep (unconscious) throughout the procedure. It requires insertion of a breathing tube into the patient’s throat (intubation) and use of a ventilator to keep the patient breathing during surgery.

Regional anesthesia (RA) includes neuraxial anesthesia (spinal and/or epidural anesthesia). Spinal anesthesia requires insertion of a needle into the area around the spinal cord and nerves for injection of medicine that slows nerve function to block pain and muscle function. In other words, the patient’s legs are numb, and they cannot move during surgery. An epidural is a similar process that leaves a catheter (like an IV) in your back so the anesthetic medication can be continuously given during a procedure. Both anesthesia options provide complete pain relief (anesthesia) to the patient and allows the surgeon to perform the joint replacement surgery in a controlled manner.

What are peripheral nerve blocks?

There are additional pain management options available for patients including peripheral nerve blocks (PNBs). These involve injecting medications around and close to nerves that result in “blocking” of pain impulses from those nerves. Depending on the type of block a patient can be numb in the area affected or be unable to move the muscles in that area for a period of time. There are various options of PNBs: femoral, adductor, sciatic, lumbar plexus, and fascia iliaca blocks. The goal of these various PNBs is to reduce or minimize post-surgical pain for patients while maintaining function so patients can walk early after surgery.

A more recently developed block technique used in total knee replacement is the IPACK block. This block delivers the medication between the large artery and nerve at the back of the knee which has been shown to help with pain after knee replacement. Femoral and adductor canal blocks are used in total knee replacement surgery. Lumbar plexus and fascia iliaca blocks are used in total hip replacement surgery. Typically, bupivacaine (numbing medication) is used in adductor canal blocks and femoral nerve blocks. IPACK blocks commonly use a combination of medications including bupivacaine and steroids.

What are risks and benefits of the anesthesia options?

There are tremendous benefits for patients with these various anesthesia options and nerve block techniques. However, each technique has risks. Spinal anesthesia may reduce nausea, blood clots, opioid use, and pulmonary complications compared to general anesthesia, but involves a needle inserted into the spine and may be difficult in patients with prior back surgery or known back arthritis. Spinal anesthesia may also be contraindicated in patients with bleeding disorders.

Each nerve block offers specific pain control for certain areas of the body and thus may have different affects in overall pain control. But the overall goal of these PNBs is to minimize pain after hip or knee replacement surgery and to maintain function for patients during the recovery process. PNBs will reduce post-operative pain and allow for greater patient compliance with protocols and improved performance with physical therapy.



Scan this with your phone to connect to more articles and videos on hip and knee care.

This article has been written by David Freccero, MD in collaboration with and the AAHKS Patient and Public Relations Committee and the AAHKS Evidence Based Medicine Committee. Links to these pages or content used from the articles must be given proper citation to the American Association of Hip and Knee Surgeons.

